

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Patent Application of:

Takafumi Terahara, et al.

Divisional of Application No.: 09/984,489

Group Art Unit:

Filed: January 13, 2004

Examiner:

For: DISTRIBUTED OPTICAL AMPLIFYING APPARATUS, OPTICAL COMMUNICATION  
STATION, OPTICAL COMMUNICATION SYSTEM, AND OPTICAL FIBER CABLE

**INFORMATION DISCLOSURE STATEMENT**

Commissioner for Patents  
PO Box 1450  
Alexandria, VA 22313-1450

Sir:

In accordance with the duty of disclosure provisions of 37 CFR § 1.56, there is hereby provided certain information which the Examiner may consider material to the examination of the subject U.S. patent application. It is requested that the Examiner make this information of record if it is deemed material to the examination of the subject application.

1. Enclosures accompanying this Information Disclosure Statement are:

- 1a. ☒ Form PTO-1449.
- 1b. ☐ Copies of IDS citations.
- 1c. ☐ An English language copy of search report(s) from a counterpart foreign application or a PCT International Search Report.
- 1d. ☐ English language translation (complete or relevant portion(s)) attached to each non-English language publication.
- 1e. ☐ Explanations of Relevancy of References (ATTACHMENT 1(e), hereto) for providing a concise explanation of each non-English publication.
- 1f. ☐ List of Copending Applications (ATTACHMENT 1(f), hereto).
- 1g. ☐ List of Additional Submitted Documents (ATTACHMENT 1(g), hereto).

2. ☐ This Information Disclosure Statement is filed under 37 CFR §1.97(b):

*(Check either Item 2a or 2b or 2c or 2d)*

- 2a. ☐ Within three months of the filing date of a national application other than a Continued Prosecution Application under § 1.53(d);
- 2b. ☐ Within three months of the date of entry of the national stage as set forth in § 1.491 in an international application.
- 2c. ☐ Before the mailing of a first Office Action on the merits; or
- 2d. ☐ Before the mailing of a first Office Action after the filing of a Request for Continued Examination under § 1.114.

3. ☐ This Information Disclosure Statement is filed under 37 CFR § 1.97(c) after the period specified in paragraph 2 above but before the mailing date of any of a Final Office Action under § 1.113, a Notice of Allowance under § 1.311 or an action that otherwise closes prosecution in the application, AND

*(Check either Item 3a or 3b; Item 3b to be checked if any reference known for more than 3 months)*

- 3a. ☐ The § 1.97(e) Statement in Item 5 below is applicable; OR  
3b. ☐ The \$180.00 fee set forth in 37 C.F.R. § 1.17(p) is:  
☐ enclosed.  
☐ to be charged to Deposit Account No. 19-3935.

4. ☐ This Information Disclosure Statement is filed under 37 CFR § 1.97(d) after the period specified in paragraph 3 above, but on or before payment of the Issue Fee, AND

- 4a. ☐ The § 1.97(e) Statement in Item 5 below is applicable; AND  
4b. ☐ The \$180.00 fee set forth in 37 C.F.R. § 1.17(p) is:  
☐ enclosed.  
☐ to be charged to Deposit Account No. 19-3935.

5. ☐ Statement under § 1.97(e) (*applicable if Item 3a or Item 4a is checked*)

*(Check either Item 5a or 5b)*

- 5a. ☐ In accordance with 37 CFR § 1.97(e)(1), it is stated that each item of information contained in this Information Disclosure Statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement.  
5b. ☐ In accordance with 37 CFR § 1.97(e)(2), it is stated that no item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in this Information Disclosure Statement was known by any individual designated in § 1.56(c) more than three months prior to the filing of this Information Disclosure Statement.

6. ☒ This is a continuation/divisional/continuation-in-part application under 37 CFR § 1.53(b).

*(Check appropriate Items 6a and/or 6b)*

- 6a. ☒ Copies of the publications listed on the attached Form PTO-1449 which were previously cited in prior application Serial No. 09/984,489, filed on October 30, 2001, and which is relied on for an earlier effective filing date for the subject application under 35 U.S.C. § 120, have been omitted pursuant to 37 CFR § 1.98(d).  
6b. ☐ Copies of the publications listed on the attached Form PTO-1449 which were not previously cited in prior application Serial No.     , filed on     , and which is relied on for an earlier effective filing date for the subject application under 35 U.S.C. § 120, are provided herewith.

7. ☐ This is a continuation/divisional application under 37 CFR § 1.53(d) or a Request for Continued Examination under 37 CFR 1.114.

*(Check either Item 7a or 7b)*

- 7a. ☐ The Issue Fee has not been paid.  
7b. ☐ A Petition to Withdraw from issue under 37 CFR § 1.313(c) is filed concurrently herewith or has been granted. A continuation/divisional application under 37 CFR § 1.53(d) or a Request for Continued Examination under 37 CFR 1.114, after payment of the Issue Fee, is proper in accordance with 37 CFR § 1.53(d)(1)(ii) or 37 CFR 1.114(a), respectively.

8. ☐ This is a Supplemental Information Disclosure Statement.

*(Check either Item 8a or 8b)*

- 8a. ☐ This Supplemental Information Disclosure Statement under 37 CFR § 1.97(f) supplements the Information Disclosure Statement filed on \_\_\_\_\_. A bona fide attempt was made to comply with 37 CFR § 1.98, but inadvertent omissions were made. These omissions have been corrected herein. Accordingly, additional time is requested so that this Supplemental IDS can be considered as if properly filed on \_\_\_\_\_.  
8b. ☐ This Supplemental Information Disclosure Statement is timely filed within one (1) month of the Notice under 37 CFR § 1.97 and 1.98, mailed \_\_\_\_\_.

9. ☐ In accordance with 37 CFR § 1.98, a concise explanation of what is presently understood to be the relevance of each non-English language publication is:

*(Check appropriate Items 9a, 9b, 9c and/or 9d)*

- 9a. ☐ satisfied because all non-English language publications were cited on the enclosed "English language version of the search report or action which indicates the degree of relevance found by the foreign office". (See MPEP § 609, Minimum Requirements for an Information Disclosure Statement, Part A(3): Concise Explanation of Relevance, 8th Ed.)  
9b. ☐ set forth in the application.  
9c. ☐ satisfied because an English language translation (complete or relevant portion(s)) is attached to each non-English language publication.  
9d. ☐ enclosed as Attachment 1(e), hereto.

10. No admission is made that the information cited in this Statement is, or is considered to be, material to patentability nor a representation that a search has been made (other than search report(s) from a counterpart foreign application or a PCT International Search Report, if submitted herewith). 37 CFR §§ 1.97(g) and (h).

11. The Commissioner is authorized to credit any overpayment or charge any additional fee required under 37 CFR § 1.17 for this Information Disclosure Statement to Deposit Account No. 19-3935.

Respectfully submitted,

STAAS & HALSEY LLP

Dated: January 13, 2004  
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Washington, D.C. 20005  
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By: Paul I. Kravetz  
Paul I. Kravetz  
Registration No. 35,230

FORM PTO-1449 U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE  <b>LIST OF REFERENCES CITED BY APPLICANT</b>  <i>(Use several sheets if necessary)</i>	ATTORNEY DOCKET NO. <b>1460.1022D</b>	APPLICATION NO. Div. of Serial No.: 09/984,489
	FIRST NAMED INVENTOR <b>Takafumi Terahara, et al.</b>	
	FILING DATE <b>January 13, 2004</b>	GROUP ART UNIT

**U.S. PATENT DOCUMENTS**

EXAMINER INITIAL		DOCUMENT NO.	DATE	NAME	CLASS	SUB- CLASS	FILING DATE
	AA	6,512,628	01-2003	Terahara et al.	359	334	
	AB	5,999,548	12-1999	Mori et al.	372	22	
	AC	5,898,714	04-1999	Morita et al.	372	6	
	AD	6,424,774	07-2002	Takeda et al.	385	122	
	AE	6,522,818	02-2003	Aso et al.	385	122	
	AF	6,157,754	12-2000	Sasaoka et al.	385	24	
	AG	6,084,993	07-2000	Mukasa, Kazunori	385	24	
	AH	5,504,829	04-1996	Evans et al.	385	123	
	AI	6,526,208	02-2003	King et al.	385	123	
	AJ	6,307,984	10-2001	Watanabe, Shigeki	385	24	

**OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, Etc.)**

TRANSLATION	
YES	NO

	AM			
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EXAMINER	DATE CONSIDERED
EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.	

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	BA						
	BB						
	BC						
	BD						
	BE						
	BF						

## FOREIGN PATENT DOCUMENTS

		DOCUMENT NO.	DATE	COUNTRY	CLASS	SUB- CLASS	TRANSLATION YES NO
	BG						
	BH						
	BI						
	BJ						

OTHER REFERENCES *(Including Author, Title, Date, Pertinent Pages, Etc.)*

	BM	Chraplyvy, A.R., et al., "8 x 10 Gb/s Transmission Through 280 km of Dispersion-Managed Fiber," IEEE PHOTONICS TECHNOLOGY LETTERS, Vol. 5, No. 10, October 1993, pp. 1233-1235.
	BN	Kurtzke, Christian, "Suppression of Fiber Nonlinearities by Appropriate Dispersion Management," IEEE PHOTONICS TECHNOLOGY LETTERS, Vol. 5, No. 10, October 1993, pp. 1250-1253.
	BO	Henmi, N., et al., "An Arrangement of Transmission-Fiber Dispersions for Increasing the Spacing Between Optical Amplifiers in Lumped Repeater Systems," IEEE PHOTONICS TECHNOLOGY LETTERS, Vol. 5, No. 11, November 1993, pp. 1337-1340.

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	CA						

## FOREIGN PATENT DOCUMENTS

		DOCUMENT NO.	DATE	COUNTRY	CLASS	SUB- CLASS	TRANSLATION YES NO
	CG						
	CH						

## OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, Etc.)

	CI	Okuno, Tashiaki, et al., "Novel Lossless Optical Transmission Line with Distributed Raman Amplification," Proceedings of the 2000 Communications Society Conference of IEICE, B-10-116, with English translation.
	CJ	Smith, N.J., et al., "Energy-scaling characteristics of solitons in strongly dispersion-managed fibers," Optics Letters, vol. 21, No. 24, December 15, 1996, pp. 1981-1983.
	CK	Morita, I., et al., "40 GBIT/S x 16 WDM TRANSMISSION OVER 2000 KM USING DISPERSION MANAGED LOW-NONLINEAR FIBER SPAN," ECOC 2000, 26th European Conference on Optical Communication, Munich, Germany, September 3-7, 2000, Vol. 4, pp. 25-26.
	CL	Mukasa, K., et al., "Wide-Band Dispersion Management Transmission Line With Medial Dispersion Fiber (MDF)," ECOC 2000, 26th European Conference on Optical Communication, Munich, Germany, September 3-7, 2000, Vol. 1, pp. 95-96.
	CM	Grüner-Nielsen, Lars, et al., "Dispersion Compensating Fibres and Perspectives For Future Developments," ECOC 2000, 26th European Conference on Optical Communication, Munich, Germany, September 3-7, 2000, Vol. 1, pp. 91-96.
	CN	Okuno, Toshiaki, et al., "Novel Lossless Optical Transmission Line with Distributed Raman Amplification," ECOC 2000, 26th European Conference on Optical Communication, Munich, Germany, September 3-7, 2000, Vol. 2, pp. 75-76

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EXAMINER INITIAL		DOCUMENT NO.	DATE	NAME	CLAS S	SUB- CLASS	FILING DATE
	AA	5,191,631	03/02/93	Rosenberg	385	123	
	AB	5,612,807	03/18/97	Ishikawa, et al.	359	161	
	AC	5,778,128	07/07/98	Wildeman	385	123	
	AD						
	AE						
	AF						

## FOREIGN PATENT DOCUMENTS

		DOCUMENT NO.	DATE	COUNTRY	CLASS	SUB- CLAS S	TRANSLATION YES NO	
	AG	JP A 9- 318824	12/12/97	Japan	G02B	6/10		

## OTHER REFERENCES (INCLUDING AUTHOR, TITLE, DATE, PERTINENT PAGES, ETC.)

	AM	Ohhira, R., et al., "40 Gbit/s x 8-ch NRZ WDM Transmission Experiment Over 80 km x 5-Span Using Distributed Raman Amplification in RDF," ECOC'99, 26-30 September 1999, Nice, France, pp.II-176, II-177.
	AN	Smith, N.J., et al., "Enhanced power solitons in optical fibres with periodic dispersion management," Electronics Letters, 4th January 1996, Vol. 32, No. 1, pp. 54-55.
	AO	Henmi, N., et al., "A New Design Arrangement of Transmission Fiber Dispersion for Suppressing Nonlinear Degradation in Long-Distance Optical Transmission Systems with Optical Repeater Amplifiers," Journal of Lightwave Technology, Vol. 11, No. 10, October 1993, pp. 1615-1621.

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